# DETAILS OF THE WEATHER IN THE UNITED STATES.

## GENERAL CONDITIONS.

The weather of the month, on the whole, was close to the normal for May. Atmospheric pressure was high on both coasts and for quite a distance into the interior, thus indicating oceanic control and the development of more than the average number of cyclonic disturbances in the Rocky Mountain region and the South. The movement of these in turn resulted in high temperatures generally east of the Rockies. To the large number of cyclones passing across the Southwest may be attributed the heavy rains of the Gulf States, including Florida.

An example of extreme weather conditions in May is found in the 48-hour snowstorm in the mountains of Colorado, New Mexico, and southern Utah on the 8th and 9th. This storm, after passing over the plains States, caused heavy snow in the mountains of South Dakota and tornadic storms locally in Nebraska.

The usual details follow.

## CYCLONES AND ANTICYCLONES.

By W. P. DAY, Observer.

Cyclonic areas were numerous, but few developed storm intensity. A majority of them appeared to form over the southern portion of the country and moved slowly north and northeastward.

Only one Alberta anticyclone was charted, while five of the Hudson Bay type and seven offshoots from the North Pacific anticyclone were noted. With one exception the latter were not well defined except on the immediate Pacific coast. As a rule, high pressure on the Pacific on reaching the coast extends inland as a lobe which later separates from the oceanic high pressure and passes to the east of the Rocky Mountains, the oceanic anticyclone meanwhile apparently retreating to the westward. These offshoots are generally weak during the warmer months and reach the Atlantic with difficulty.

| LOWS. | Alberta. | North Pacific. | South Pacific. | Northern Rocky Mountain. | Colorado. | Texas. | East Gulf. | South Atlantic. | Central. | Total. |
|---|---|---|---|---|---|---|---|---|---|---|
| May, 1922 | 3.0 | ..... | 1.0 | 1.0 | 3.0 | 3.0 | 4.0 | ..... | 3.0 | 18.0 |
| Average number, 1892-1912, inclusive | 2.9 | 1.3 | 1.2 | 0.7 | 1.4 | 0.7 | 0.2 | 0.3 | 1.0 | 9.7 |

| HIGHS. | North Pacific. | South Pacific. | Alberta. | Plateau and Rocky Mountain region. | Hudson Bay. | Total. |
|---|---|---|---|---|---|---|
| May, 1922 | 7.0 | ..... | 1.0 | ..... | 5.0 | 13.0 |
| Average number, 1892-1912, inclusive | 1.3 | 0.5 | 3.3 | 0.7 | 0.9 | 6.7 |

## FREE-AIR CONDITIONS.

By W. R. GREGG, Meteorologist.

Mean free-air temperatures for the month (Table 1) did not differ greatly from the normal, being slightly below at Drexel and above at all other stations. The greatest positive departures occurred at Royal Center, in agreement with the conditions shown in Climatological Chart III, viz, abnormally high temperatures in the States adjoining the Great Lakes. Elsewhere throughout the country there was little variation from the normal. At Royal Center the departures were less in the upper levels than at and near the surface—a condition that is usually found, viz, a greater tendency on the average to maintain a steady state in the free atmosphere than in the region below 2 or 3 kilometers.

There were no unusually high or low temperatures at any of the stations. In general the individual variations from the monthly mean were less than 5° C.; in no case were they as large as 10° C.

Relative humidities were for the most part slightly above normal; decidedly so in the extreme upper levels at Broken Arrow. There were no extended periods of exceptionally dry conditions at any of the stations.

Vapor pressures were generally above the seasonal average in conformity with the positive temperature departures. The excess was greatest at Royal Center; at Drexel there was little variation from normal conditions.

In Table 2 may be found the resultant winds for the month at the six kite stations and, for the sake of comparison, the normal values. In general there was a stronger south component than usual. Particularly was this true at Royal Center, where, it will be recalled, temperatures were abnormally high. At Drexel, on the other hand, the south component was comparatively weak and the temperatures, as previously stated, were somewhat below normal. Resultant speeds did not differ greatly from the normal at any station or at any altitude.

High winds, 30 m. p. s. or over, were observed as follows:

[By means of kites.]

| Station. | Date. | Direction. | Velocity. | Altitude. |
|---|---|---|---|---|
| | | | *M. p. s.* | *Meters.* |
| Drexel, Nebr. | 6 | nw. | 31 | 2,200 |
| Due West, S. C. | 19 | wsw. | 40 | 2,900 |

[By means of pilot balloons.]

| | | | | |
|---|---|---|---|---|
| Broken Arrow, Okla. | 5 | nw. | 44 | 9,200 |
| Do. | 13 | w. | 40 | 8,500 |
| Do. | 20 | w. | 30 | 4,500 |
| Burlington, Vt. | 8 | nw. | 31 | 3,500 |
| Camp Bragg, N. C. | 19 | wsw. | 32 | 4,500 |
| Denver, Colo. | 8 | sw. | 30 | 2,000 |
| Drexel, Nebr. | 11 | sw. | 31 | 600 |
| Do. | 12 | wsw. | 31 | 2,500 |
| Do. | 15 | w. | 44 | 8,700 |
| Ellendale, N. Dak. | 2 | sw. | 30 | 600 |
| Groesbeck, Tex. | 3 | wsw. | 30 | 7,000 |
| Do. | 18 | wnw. | 34 | 10,000 |
| Mather Field, Calif. | 10 | nnw. | 31 | 4,300 |
| Do. | 24 | sw. | 32 | 6,200 |
| Mitchel Field, N. Y. | 8 | nne. | 35 | 3,000 |
| Do. | 11 | n. | 46 | 2,800 |
| Rockwell Field, Calif. | 10 | nw. | 30 | 5,200 |
| Do. | 16 | wsw. | 36 | 8,300 |
| Ross Field, Calif. | 10 | nw. | 45 | 4,800 |
| Washington, D. C. | 8 | nw. | 30 | 6,500 |

This table shows that with the approach of summer conditions there is a marked decrease in the number of high winds observed. Weather conditions for the month, as a whole, were unsettled and there were more than the usual number of cyclones, but with three exceptions these were comparatively weak and poorly developed. The one on the 11th to 12th, central in the Dakotas, was by far the most active and best developed during the month. This storm was nearly circular in